

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

REVISED PROJECT APPLICATION FORM

Name of Project: Evaluating BMP effectiveness for human pathogens

Project Applicant: Southern California Coastal Water Research Project

Applicant Contact Person: Kenneth Schiff

Applicant Phone Number: 714.755.3202

Applicant Email Address: kens@sccwrp.org

Problem Statement:

The Surfer Health Study identified that there is an increased risk of illness when entering the ocean following wet weather and recent [Bight] Regional Monitoring found that human pathogens are frequently present in wet weather discharges from urban watersheds in the San Diego Region. The current strategy to achieve compliance with bacteria objectives and TMDL targets is the use of stormwater best management practices (BMPs). While some stormwater BMPs have been evaluated for their capacity to reduce indicator bacteria – the focal point of regulatory compliance – there is almost no information on their ability to reduce the true vector of illness, human pathogens such as viruses. Viruses are responsible for most beachgoer illness and there is no engineering expectation that BMPs will have equivalent capacity to reduce bacteria and viruses. This project will quantify BMP effectiveness specifically for human pathogens, rank which BMPs are most effective for future implementation, and provide an optimal BMP placement strategy within San Diego watersheds.

Work Plan containing tasks and deliverables compartmentalized into partial funding opportunities, if applicable.

This project will consist of four primary tasks including:

- 1) Determining the location of BMPs within the San Diego Region. The *product from this task* will be a GIS map of BMP locations by typology, a determination of how much stormwater in the San Diego Region is treated by BMPs before discharge, and selection of the most prevalent BMP types for further testing. This task will be accomplished through surveys of Water Bond grant programs, regulated party

implementation strategies, recent construction permits, and site visits. Currently, no map exists for locations of BMPs throughout the San Diego Region.

- 2) BMP Effectiveness testing. The *product from this task* will be tables of pathogen removal efficiencies and expected effluent pathogen concentrations by BMP types. This task will require collection of paired stormwater influent and effluent samples across different BMP types for multiple storm events. Differences between influent and effluent concentrations will be used to estimate reduction efficiency. Effluent concentrations will be used to determine BMP effectiveness and expected pathogen contributions (if any) post-treatment. All samples will be analyzed for traditional indicator bacteria, providing much needed updates to existing BMP performance databases (i.e., <http://www.bmpdatabase.org/>) specifically for the San Diego Region. New laboratory technology, tested and verified in San Diego, will be used to analyze samples for human pathogens including viruses, providing the critical information for pathogen removal that currently does not exist for San Diego or elsewhere nationally.
- 3) Optimizing BMP placement. In coordination with existing Water Quality Improvement Plans (WQIPs) and recent monitoring results, *the product from this task* will be a GIS map optimizing placement of the most effective BMPs for human pathogens in the San Diego Region with an emphasis towards Disadvantaged Communities. This task will require modifying the existing watershed modeling previously conducted to focus on infrastructure improvements closest to the source(s) of contamination.
- 4) Reporting. The *product from this task* will be project reporting including quarterly and annual reports, as necessary, and the project final report. GIS databases will also be given to the San Diego RWQCB.

Timeline (from funding approval) with milestones and end dates.

- 1) Determining the location of BMPs within the San Diego Region - 6 months from project inception.
- 2) BMP Effectiveness testing - 6 months from end of wet season when BMPs will be tested.
- 3) Optimizing BMP placement - 6 months from ranking of BMP effectiveness
- 4) Reporting - Final Report 8 months from ranking of BMP effectiveness

Total estimated project time: 24 months pending funding availability and rainfall.

Budget broken down into tasks.

- 1) Determining the location of BMPs within the San Diego Region. \$45,000

- 2) BMP Effectiveness testing. \$210,000
- 3) Optimizing BMP placement. \$65,000
- 4) Reporting. \$25,000

Total Project Cost: \$345,000

Each task can be funded independently.

Discuss all permitting requirements, including CEQA, and their status. If exempt, cite applicable statute.

Since this project will be sampling existing BMPs, there will not be a requirement for any construction permits, and it would be exempt from CEQA/NEPA requirements (Article 18, Section 15306. Information Collection). There likely will be requirements for encroachment permits since most BMPs will be publicly owned property; SCCWRP has successfully obtained many of these permits in the past.

Watershed(s) affected.

This project will affect all San Diego Region watersheds by optimizing BMP effectiveness, and provide opportunities to reduce the primary risks to both fresh and marine recreational water quality. The project proposes improvements that can control both stormwater and [leaking] sanitary sources. Tasks will focus on optimizing strategies that address disadvantaged communities and/or 303(d) listed waterbodies, where optimization is important to protect public health, but will also support efficient use of public funds.

Describe if this project can be a basis for additional funding from other sources.

This project has several opportunities for co-funding and in-kind service contributions. These opportunities include leveraged state-funded projects (i.e., Proposition 1 Water Bond Grants) or regulated party contributions (i.e., Stormwater Monitoring Coalition). These collaborations can be used to offset project costs or, alternatively, be used to enhance the project by evaluating additional BMP types or more detailed implementation optimization scenarios.

Monitoring, success criteria, and other tools to track long-term success.

Success criteria of this project will be defined by how many of the BMPs, prioritized as the most effective for pathogen removal in this study, are being used in San Diego Region watersheds. Long-term success will be quantified by how many BMPs in the optimized strategy are either included in updated WQIPs or included in future State Water Board grant proposals. Sampling and analysis is included as part of this project. Long-term monitoring will be accomplished through a combination of existing TMDL monitoring requirements, the County Department of Environmental Health routine beach monitoring, and via the recurring [Bight] Regional Monitoring of beach water

quality (including pathogens). Additional Performance Goals include standard Water Board requirements including timely completion of tasks, production of high quality data following Surface Water Ambient Monitoring (SWAMP) protocols, and data submittal to the California Environmental Data Exchange Network (CEDEN).

Description of how the project is resilient to climate change.

This project helps the San Diego Region respond to climate change by selecting the most effective BMPs for stormwater runoff. A warming ocean will likely attract more beach goers, who are at greater risk of exposure to pathogens resulting in gastrointestinal and other illnesses following storm events. Storm events under future climate scenarios have the potential to be more intense, and thus more likely to contribute greater pathogen loads. Selecting the most effective BMPs will help reduce this risk and maintain the recreational water contact beneficial use.

Applicant's ability/authority to receive and distribute funds.

The Southern California Coastal Water Research Project is a Joint Powers Authority, which serves as a governmental agency and enables direct authority to receive SEP funds. SCCWRP has received SEP funds from the San Diego Regional Board in the past, and has always completed the projects on time and on budget.

Is the project to conduct work that is required by any entity/agency? (e.g. cleanup or mitigation)

This project is not required by another entity/agency. BMP installations are required by stormwater dischargers, who can use this information on enhanced performance to help ensure future success.